



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/707,690

11/07/2000

Nan Shan Hwu

SAA-54

9539

23569

7590

10/07/2004

SQUARE D COMPANY
INTELLECTUAL PROPERTY DEPARTMENT
1415 SOUTH ROSELLE ROAD
PALATINE, IL 60067

EXAMINER

NGUYEN, TOAN D

ART UNIT

PAPER NUMBER

2665

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/707,690	HWU, NAN SHAN	
	Examiner	Art Unit	
	Toan D Nguyen	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-13, 15-18, 20-23 is/are rejected.
- 7) ☒ Claim(s) 9, 14, 19 and 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: In figures 2 and 3, references 27 and 28 (page 8 lines 17-24). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 7 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deitz et al (US 6,578,158) in view of Cook et al (US 5,313,386) further in view of El-Batal (US 6,192,027).

For claim 1, Deitz et al. disclose method and apparatus for providing a RAID controller having transparent failover and fallback comprising:

a first and a second controller (figure 1, references 105a and 105b, col. 4 lines 62-63);

Art Unit: 2665

an IO module (col. 5 lines 41-46); and

a high speed fiber optic network cable for operably connecting the first controller (figure 1, reference 105a), the second controller (figure 1, reference 105b) and the IO module, wherein a signal is transmitted over the high speed fiber optic network cable (figure 1, reference 145, col. 5 lines 18-25).

However, Deitz et al. do not disclose a first controller and a second controller are programmable logic controller, the first programmable logic controller being in an active state, the second programmable logic control being in a standby state. In an analogous art, Cook et al disclose a first controller and a second controller are programmable logic controller (figure 1, references 12' and 12'', col. 3 line 49), the first programmable logic controller (figure 1, reference 12') being in an active state, the second programmable logic control (figure 1, reference 12'') being in a standby state (Abstract lines 2-6). Cook et al disclose further a network connector (figure 9, reference 144, col. 11 lines 62-63).

One skilled in the art would have recognized a programmable logic controller to use the teachings of Cook et al in the system of Deitz et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the programmable logic controller as taught by Cook et al in Deitz et al's system with the motivation being to provide a memory which stores a control program and data, such as I/O image tables and operating status data (col. 2 lines 23-25).

Furthermore, Deitz et al in view of Cook et al do not disclose the high speed fiber optic network cable at a rate of at least 100 Mb/s. In an analogous art, El-Batal discloses disclose the high speed fiber optic network cable a rate of at least 100 Mb/s (col. 4 line 35).

One skilled in the art would have recognized a rate of at least 100 Mb/s to use the teachings of El-Batal in the system of Deitz et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the rate of at least 100 Mb/s as taught by El-Batal in Deitz et al.'s system with the motivation being to provide a RAID disc array controller system with supporting dual 100 Mb/s Fibre Channel host ports and quad Fibre Channel disc ports (col. 4 lines 34-44).

For claim 7, Deitz et al. disclose wherein the network connector is a hub (figure 1, references 150a and 150b) for controlling signal communication over the fiber optic network (col. 5 lines 18-25).

For claim 10, Deitz et al. disclose method and apparatus for providing a RAID controller having transparent failover and failback comprising the steps of:

providing a first and a second controller (figure 1, references 105a and 105b, col. 4 lines 62-63);

providing an IO module (col. 5 lines 41-46); and

operably connecting the first controller (figure 1, reference 105a), the second controller (figure 1, reference 105b) and the IO module (col. 5 lines 29-30) and a fiber optic cable (figure 1, reference 145, col. 5 lines 18-19), the operably connected first controller (figure 1, reference 105a), the second controller (figure 105b), the IO module (col. 5 lines 41-46), the fiber optic cable (figure 1, reference 145, col. 5 lines 18-19) forming a sub-network (figure 1, col. 5 lines 18-32 and col. 5 lines 41-46 as sub-network of network 100).

However, Deitz et al. do not disclose a first controller and a second controller are programmable logic controller, the first programmable logic controller being in an active state,

Art Unit: 2665

the second programmable logic control being in a standby state. In an analogous art, Cook et al disclose a first controller and a second controller are programmable logic controller (figure 1, references 12' and 12'', col. 3 line 49), the first programmable logic controller (figure 1, reference 12') being in an active state, the second programmable logic control (figure 1, reference 12'') being in a standby state (Abstract lines 2-6). Cook et al disclose further a connector (figure 9, reference 144, col. 11 lines 62-63).

One skilled in the art would have recognized a programmable logic controller to use the teachings of Cook et al in the system of Deitz et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the programmable logic controller as taught by Cook et al in Deitz et al's system with the motivation being to provide a memory which stores a control program and data, such as I/O image tables and operating status data (col. 2 lines 23-25).

Furthermore, Deitz et al in view of Cook et al do not disclose wherein data is transferred throughout the sub-network at a rate of at least 100 Mb/s. In an analogous art, El-Batal discloses wherein data is transferred throughout the sub-network a rate of at least 100 Mb/s (col. 4 line 35).

One skilled in the art would have recognized wherein data is transferred throughout the sub-network a rate of at least 100 Mb/s to use the teachings of El-Batal in the system of Deitz et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the rate of at least 100 Mb/s as taught by El-Batal in Deitz et al.'s system with the motivation being to provide a RAID disc array controller system with supporting dual 100 Mb/s Fibre Channel host ports and quad Fibre Channel disc ports (col. 4 lines 34-44).

Art Unit: 2665

For claim 11, Deitz et al. disclose further comprising controlling the transmission of the signal on the sub-network (figure 1, col. 5 lines 18-25).

For claim 12, Deitz et al. disclose wherein the step of controlling signal communication on the sub-network comprises a hub (figure 1, references 105a and 150b, col. 5 lines 18-25).

5. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deitz et al (US 6,578,158) in view of Cook et al (US 5,313,386) and El-Batal (US 6,192,027) further in view of Flood et al (US 4,937,777).

For claims 2 and 3, Deitz et al. in view of Cook et al and El-Batal disclose wherein each controller comprises:

- a processor (figure 1, references 185a and 185b, col. 5 line 54);

- an operating system executed by the processor (figure 1, col. 5 lines 51-55).

However, Deitz et al. in view of Cook et al and El-Batal do not disclose:

- a co-processor;

- a co-operating system executed by the co-processor wherein the operating system and the co-operating system cooperate to transfer data between the first controller, the second controller and the IO module.

In an analogous art, Flood et al. disclose:

- a co-processor (figure 4, reference 100, col. 11 line 57);

- a co-operating system executed by the co-processor (figure 4, col. 11 lines 58-61)

wherein the operating system and the co-operating system cooperate to transfer data between the first controller, the second controller and the IO module (col. 10 lines 56-65 and col. 11 lines 52-

Art Unit: 2665

61). Flood et al. disclose further wherein the operating system is embedded in the processor (col. 11 lines 52-58 as set forth in claim 3).

One skilled in the art would have recognized a co-processor to use the teachings of Flood et al. in the system of Deitz et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the co-processor as taught by Flood et al. in Deitz et al.'s system with the motivation being to execute specific types of instructions included in the control program (col. 11 lines 52-54).

6. Claims 4-6, 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deitz et al. (US 6,578,158) in view of Cook et al (US 5,313,386) and El-Batal (US 6,192,027) further in view of Dube' et al (US 6,434,157).

For claims 4-6, 8 and 13, Deitz et al. in view of Cook et al and El-Batal do not disclose wherein each controller further comprises a network identifier and the network identifier of each controller is selected in response to the operating state of its respective controller. In an analogous art, Dube' et al disclose wherein each controller further comprises a network identifier and the network identifier of each controller is selected in response to the operating state of its respective controller (col. 2 lines 25-27). Dube' et al disclose further wherein the network identifier is an Internet Protocol address (col. 2 lines 25-27 as set forth in claim 5); and wherein the network address identifier is a Media Access Control address (col. 2 lines 25-27 as set forth in claim 6); a master-slave type application layer protocol to ensure that only one signal is being transmitted at a time (col. 1 lines 24-27 as set forth in claims 8 and 13).

One skilled in the art would have recognized a network identifier to use the teachings of Dube' et al in the system of Deitz et al. Therefore, it would have been obvious to one of ordinary

Art Unit: 2665

skill in the art at the time of the invention, to use the network identifier as taught by Dube' et al in Deitz et al.'s system with the motivation being to provide a MODBUS application Protocol used for sending MODBUS messages over TCP/IP (col. 1 lines 23-24).

7. Claims 15, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deitz et al (US 6,578,158) in view of Cook et al (US 5,313,386) and El-Batal (US 6,192,027) further in view of Olson et al (US 6,169,928) and Fujimori et al (US 6,542,510).

For claims 15 and 20, Deitz et al. disclose method and apparatus for providing a RAID controller having transparent failover and failback comprising:

a first and a second controller (figure 1, references 105a and 105b, col. 4 lines 62-63);
providing an IO module (col. 5 lines 41-46);

operably connecting the first controller (figure 1, reference 105a), the second controller (figure 1, reference 105b) and the IO module (col. 5 lines 41-46) and with a fiber optic cable (figure 1, reference 145, col. 5 lines 18-19) and forming a sub-network (figure 1, col. 5 lines 18-32 and col. 5 lines 41-46 as sub-network of network 100);

controlling signal communications over the fiber optic sub-network (col. 5 lines 18-25)

However, Deitz et al. do not disclose a first controller and a second controller are programmable logic controller, the first programmable logic controller being in an active state, the second programmable logic control being in a standby state. In an analogous art, Cook et al disclose a first controller and a second controller are programmable logic controller (figure 1, references 12' and 12'', col. 3 line 49), the first programmable logic controller (figure 1, reference 12') being in an active state, the second programmable logic control (figure 1, reference 12'') being in a standby state (Abstract lines 2-6). Cook et al disclose further a

Art Unit: 2665

connector (figure 9, reference 144, col. 11 lines 62-63); and placing the first programmable logic controller in primary mode (figure 1, reference 12') and the second programmable logic controller (figure 1, reference 12'') in secondary mode (Abstract lines 2-6).

One skilled in the art would have recognized a programmable logic controller to use the teachings of Cook et al in the system of Deitz et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the programmable logic controller as taught by Cook et al in Deitz et al's system with the motivation being to provide a memory which stores a control program and data, such as I/O image tables and operating status data (col. 2 lines 23-25).

Deitz et al in view of Cook et al do not disclose wherein data is transferred at a rate of at least 100 Mb/s. In an analogous art, El-Batal discloses wherein data is transferred a rate of at least 100 Mb/s (col. 4 line 35).

One skilled in the art would have recognized wherein data is transferred throughout the sub-network a rate of at least 100 Mb/s to use the teachings of El-Batal in the system of Deitz et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the wherein data is transferred throughout the sub-network rate of at least 100 Mb/s as taught by El-Batal in Deitz et al.'s system with the motivation being to provide a RAID disc array controller system with supporting dual 100 Mb/s Fibre Channel host ports and quad Fibre Channel disc ports (col. 4 lines 34-44).

Furthermore, Deitz et al in view of Cook et al and El-Batal do not disclose:
assigning a network identifier to each controller;

Art Unit: 2665

sensing the operating state of the first programmable logic controller, wherein the network identifier of the first programmable logic controller is selected in response to the operating state of the first programmable logic controller;

exchanging the network identifiers between the first programmable logic controller and the second programmable logic controllers; and

transmitting a reverse address resolution protocol (RARP) message.

In an analogous art, Olson et al disclose:

assigning a network identifier to each controller (figure 1, references A,B and C, col. 3 lines 21-25);

sensing the operating state of the first programmable logic controller (figure 2, reference PLC 100), wherein the network identifier of the first programmable logic controller is selected in response to the operating state of the first programmable logic controller (figure 2, reference PLC 100) (col. 4 lines 66-67); and

exchanging the network identifiers between the first programmable logic controller (figure 2, reference 100) and the second programmable logic controllers (figure 2, reference 105) (col. 12-19). Olson et al disclose wherein the network identifier is an Internet Protocol Address (col. 4 line 66 as set forth in claim 20).

One skilled in the art would have recognized assigning a network identifier to each controller to use the teachings of Olson et al in the system of Deitz et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the assigning a network identifier to each controller as taught by Olson et al in Deitz et al's system

Art Unit: 2665

with the motivation being to uniquely identify the EGD device (here a PLC) on the network (col. 5 lines 3-4).

Deitz et al in view of Cook et al and El-Batal further in view of Olson et al do not disclose transmitting a reverse address resolution protocol (RARP) message. In an analogous art, Fujimori et al disclose transmitting a reverse address resolution protocol (RARP) message (figure 1, col. 1 lines 60-62).

One skilled in the art would have recognized transmitting a reverse address resolution protocol (RARP) message to use the teachings of Fujimori et al in the system of Deitz et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the transmitting a reverse address resolution protocol (RARP) message as taught by Fujimori et al in Deitz et al's system with the motivation being to determine its IP address through the network (col. 1 lines 50-51).

For claim 22, Deitz et al. disclose wherein the network connector is a hub (figure 1, references 150a and 150b) for controlling signal communication over the fiber optic network (col. 5 lines 18-25).

8. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deitz et al (US 6,578,158) in view of Cook et al (US 5,313,386), El-Batal (US 6,192,027), Olson et al (US 6,169,928) and Fujimori et al (US 6,542,510) further in view of Flood et al (US 4,937,777).

For claims 16-18, Deitz et al. in view of Cook et al and El-Batal disclose wherein each controller comprises:

- a processor (figure 1, references 185a and 185b, col. 5 line 54);

- an operating system executed by the processor (figure 1, col. 5 lines 51-55).

Art Unit: 2665

However, Deitz et al. in view of Cook et al, El-Batal, Olson et al and Fujimori et al do not disclose:

a co-processor;

a co-operating system executed by the co-processor wherein the operating system and the co-operating system cooperate to transmit data throughout the sub-network.

In an analogous art, Flood et al. disclose:

a co-processor (figure 4, reference 100, col. 11 line 57);

a co-operating system executed by the co-processor (figure 4, col. 11 lines 58-61) wherein the operating system and the co-operating system cooperate to transmit data throughout the sub-network (col. 10 lines 56-65 and col. 11 lines 52-61). Flood et al. disclose further wherein the co-processor (figure 11, reference 100) is embedded within the processor (col. 11 lines 52-58 as set forth in claim 17); wherein the operating system is embedded in the processor (figure 11, reference 98) (col. 11 lines 52-58 as set forth in claim 18).

9. Claims 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deitz et al (US 6,578,158) in view of Cook et al (US 5,313,386), El-Batal (US 6,192,027), Olson et al (US 6,169,928), Fujimori et al (US 6,542,510) further in view of Dube' et al (US 6,434,157).

For claim 21, Deitz et al in view of Cook et al, El-Batal, Olson et al and Fujimori et al do not disclose wherein the network identifier is a Media Access Control address. In an analogous art, Dube' et al disclose wherein the network identifier is a Media Access Control address (col. 2 lines 25-27). Dube' et al disclose a master-slave type application layer protocol to ensure that only one signal is being transmitted at a time (col. 1 lines 24-27 as set forth in claims 23).

One skilled in the art would have recognized a Media Access Control address to use the teachings of Dube' et al in the system of Deitz et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the Media Access Control address as taught by Dube' et al in Deitz et al's system with the motivation being to assign the bridge's Internet Protocol (IP) address through a Bootstrap Protocol (BOOTP) server (col. 2 lines 25-27).

Allowable Subject Matter

10. Claims 9, 14, 19 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

11. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Applicant's amendment on June 29, 2004 necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

Art Unit: 2665

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan D Nguyen whose telephone number is 703-305-0140. The examiner can normally be reached on Monday- Friday (7:00AM-4:30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Huy Vu can be reached on 703-308-6602. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

TN
TN



HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600